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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/618,282
Filing Date	July 9, 2003
First Named Inventor	Sorrells, Martin
Group Art Unit	
Examiner Name	
Total Number of Pages in This Submission: 12+	Attorney Docket Number: AES 03-002

ENCLOSURES *(check all that apply)*

- [ ] Fee Transmittal Form
  - [ ] Fee Attached
- [ ] Amendment / Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [X] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
  - [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Assignment Papers *(for an Application)*
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
- [ ] After Allowance Communication to Group
- [ ] Appeal Communication to Board of Appeals and Interferences
- [ ] Appeal Communication to Group (*Appeal Notice, Brief, Reply Brief*)
- [ ] Proprietary Information
- [ ] Status Letter
- [X] Other Enclosure(s) *(please identify below)*:

Copy of 7 US Patents
Copy of 3 Foreign Patents
Copy of 89 Technical Papers, articles and tutorials

Remarks

Our self-addressed stamped postcard which we would appreciate your date stamping and returning to us upon receipt.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	PD Holdings (USA), Inc. Patrick H. McCollum
Signature	Patrick H McCollum
Date	22 Oct 03

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on this date: 10-22-03

Typed or printed name	Carrie Baehler		
Signature	Carrie Baehler	Date	October 22, 2003

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS:	Martin Sorrells
U.S. APPLICATION NUMBER:	10/618,282
U.S. FILING DATE:	July 9, 2003
ATTORNEY DOCKET NO:	AES 03-002
TITLE OF THE INVENTION:	Compensation Ensemble Crystal Oscillator for Use in a Well Borehole System
GROUP ART UNIT	

Assistant Commissioner for Patents
Mail Stop DD; P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Dear Sirs:

In accordance with §§ 1.56, 1.97 and 1.98 of Title 37 of the Code of Federal Regulations and pursuant to Applicant's duty of candor and good faith toward the United States Patent and Trademark Office, applicant discloses the following information items which constitute the most relevant information items of which persons substantively involved in the present application are aware. Pursuant to 37 CFR § 1.97(h) the information disclosed shall not be construed to be an admission of materiality to patentability.

Seven (7) U.S. Patents, three (3) Foreign Patents and eighty-nine (89) technical papers, articles and tutorials that relate to this invention are listed on the enclosed PTO/SB/08A and copies of these items are enclosed pursuant to § 1.98.

Respectively Submitted,

Patrick H. McCollum

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 01 of 10

Complet if Known	
Application Number	10/618,269
Filing Date	July 9, 2003
First Named Inventor	Sorrells, Martin
Art Unit	
Examiner Name	
Attorney Docket Number	AES 03-002

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number: Number - Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-5,555,220	09-10-1996	Minto, James	
		US-5,585,556	12-17-1996	Petersen, et al.	
		US-5,842,149	11-24-1998	Harrell et al.	
		US-6,023,444	02-08-2000	Naville, et al.	
		US-6,308,137B1	10-23-2001	Underhill et al.	
		US-6,382,332B1	05-07-2002	Eaton, Michael	
		US-2002/0060952A1	05-23-2002	Cecconi et al.	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document: Country Code[3] - Number[4] - Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
		EP0716319A2	06-12-1996	Petersen & Heggernes		
		EP1002934A2	05-24-2000	Eaton, Michael		
		WO98/17894	04-30-1998	MacDonald et al.		

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[1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 02 of 10

Complete if Known	
Application Number	10/618,282
Filing Date	July 9, 2003
First Named Inventor	Sorrells, Martin
Group Art Unit	
Examiner Name	
Attorney Docket Number	AES 03-002

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
		Raymond L. Filler, The Acceleration Sensitivity of quartz Crystal Oscillators: A Review IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Vol 35, No. 3, May 1988	
		R.C. Smythe, Acceleration Effects in Crystal Filters: A Tutorial IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Vol 39, No. 3, May 1992	
		Roger W. Ward, The Constants of Alpha Quartz 14th Piezoelectric Devices Conference and Exhibits, September 15-17, 1992	
		John R. Vig, Introduction to Quartz Frequency Standards Army Reserach Laboratory; SLCET-TR-91-1 (Rev. 1), October, 1992	
		Arthur Ballato, Piezoelectricity: Venerable Effect, Modern Thrusts Army Research Laboratory; ARL-TR-70, August, 1994	
		Arthur Ballato, Doubly Rotated Thickness Mode Plate Vibrators US Army Electronics Technology & Devices Laboratory (reprinted from Physical Acoustics Vol XIII, 1977, Academic Press Inc.)	
		John R. Vig, and Thrygve R. Meeker, The Aging of Bulk Acoustic Wave Resonators, Filters and Oscillators; US Army Communications-Elecronics Command, 45th Annual Symposium on Frequency Control, pp. 77-101, 1991	
		John A. Kustes and John R. Vig, Hysteresis in Quartz Resonators: A Review IEEE Transactions of Ultrasonics, Ferroelectrics, and Frequency Control, Vol 39, No. 3, May 1991	
		Errol P. Eernisse, Roger W. Ward, Robert B. Wiggins, Survey of Quartz Bulk Resonator Sensor Technologies, IEEE Transactions of Ultransonics, Ferroelectrics, and Frequency Control, Vol. 35, No. 3, May, 1988	
		R. Brendel, Influence of a Magnetic Field on Quartz Crystal Resonators IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, Vol 43, No. 5, pp 818-831, September 1996	
		Colin K. Campbell, Applications of Surface Acoustic and Shallow Bulk Acoustic Wave Devices, Proceedings of the IEEE, Vol. 77, No. 10, October 1989	

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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 03 of 10

Complet if Known	
Application Number	10/618,282
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First Named Inventor	Sorrells, Martin
Group Art Unit	
Examiner Name	
Attorney Docket Number	AES 03-002

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		George Kamas and Sandra Howe, Coordinated Universal Time (UTC) and Leap Second Time and Frequency Users Manual, NBS Special Publication 559, Chapter 2, Section 2.1, November 1979 (updated May 1997)	
		W. J. Riley, The Calculation of Time Domain Fequency Stability - a revised version of these 2 papers: A Test Suite for the Calculation of Time Domain Frequency Stability, Proc. 1995 IEEE Freq. Contrl. Symp., pp. 360-366, June 1995 and Addendum to a Test Suite for the Calculation of Time Domain Frequency Stability, Proc. 1996 IEEE Freq. Contrl. Symp., pp. 880-882, June 1996.	
		John R. Vig and Arthur Ballato, Frequency Control Devices, reprints from Ultasonic Instruments and Devices 1999, Academic Press, Inc. pp 637 - 701	
		Errol P. EerNisse, Quartz Crystals vs. Their Environment: Time Bases or Sensors?: Tutorials, IEEE, Frequency Control Reference and Tutorial Information	
		Fabien Josse and Richard W. Cernosek; Resonant Piezoelectric Devices as Physical and Biochemical Sensors; 2002 IEEE International Frequency Control Symposium Tutorials, New Orleans, June 1, 2002.	
		Leonhard M. Reindl, Wireless Passive SAW Identification Marks and Sensors; A Tutorial 2002 IEEE International Frequency Control Symposium Tutorials, New Orleans, June 1, 2002.	
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		Leonard S. Cutler; Passive Atomic Frequency Standards: A Tutorial 2002 IEEE International Frequency Control Symposium Tutorials, New Orleans, June 1, 2002.	

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Sheet 04 of 10

Compl t if Kn wn	
Application Number	10/618,282
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First Named Inventor	Sorrells, Martin
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Examiner Name	
Attorney Docket Number	AES 03-002

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		W. J. Riley; Rubidium Frequency Standard Technology: A Tutorial PTTI 2002 Tutorial, Reston, VA December 2, 2002	
		Lute Maleki; Advanced Atomic Clocks; A Tutorial 2000 IEEE International Frequency Control Symposium Tutorials, Kansas City June 6, 2000	
		X. Steve Yao; Photonic Techniques for Frequency and Timing: A Tutorial 2000 IEEE International Frequency Control Symposium Tutorials, Kansas City June 6, 2000	
		G. John Dick; Sapphire Microwave Frequency Sources; A Tutorial 2002 IEEE International Frequency Control Symposium Tutorials, New Orleans, June 1, 2002.	
		Eva S. Ferre-Pikal; PM and AM Noise Measurement Techniques - Part I: A Tutorial 2002 IEEE International Frequency Control Symposium Tutorials, New Orleans, June 1, 2002.	
		Craig Nelson; PM & AM Noise II: A Tutorial 2002 IEEE International Frequency Control Symposium Tutorials, New Orleans, June 1, 2002.	
		Victor S. Reinhardt; The Basics of Statistical Processes and Time and Frequency; A Tutorial. 2002 IEEE International Frequency Control Symposium Tutorials, New Orleans, June 1, 2002.	
		Don Percival; An Introduction to the Wavelet Analysis of Time Series; A Tutorial 2000 IEEE International Frequency Control Symposium Tutorials, Kansas City June 6, 2000	
		Venceslav F. Kroupa; Principles of Phase Locked Loops (PLL): A Tutorial 2000 IEEE International Frequency Control Symposium Tutorials, Kansas City June 6, 2000	
		Bob Temple; Clock Jitter - Jitter Estimation from Frequency Domain Measurements: A Tutorial. 2000 IEEE International Frequency Control Symposium Tutorials, Kansas City June 6, 2000	
		Thomas E. Parker; Introduction to Time and Frequency Transfer: A Tutorial 2002 IEEE International Frequency Control Symposium Tutorials, New Orleans, June 1, 2002.	

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		Samuel R. Stein; Digital Measurement of Precision Oscillators; A Tutorial IEEE, Frequency Control Reference and Tutorial Information website	
		D.A. Howe, D.W. Allan, and J.A. Barnes; Properties of Oscillator Signals and Measurement Methods; A Tutorial. IEEE, Frequency Control Reference and Tutorial Information website.	
		Jack Kusters; Fundamentals of X-Ray Orientation of Quartz Crystals; A Tutorial 2000 IEEE International Frequency Control Symposium Tutorials, Kansas City June 6, 2000	
		Dan Russell; Acoustics and Vibration Animations; A Tutorial IEEE, Frequency Control Reference and Tutorial Information website	
		Time and Frequency Division 847, National Institute of Standards and Technology; IEEE, Frequency Control Reference and Tutorial Information website	
		Arthur Ballato; Transmission-Line Analogs for Piezoelectric Layered Structures: A Ph.D. Dissertations; IEEE, Frequency Control Reference and Tutorial Information website	
		Angela M. Slocum; Basic Oscillators 101 - A Guide to Specifying Timing Devices: A Tutorial. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		Mike F. Wacker; Frequency Stability Characterization in the Time Domain: A Tutorial Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
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Sheet 06 of 10

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		Dan Nehring; Specifying OCXOs for Base Stations; A Tutorial Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		William P. Hanson and Timothy E Wickard; Acceleration Sensitivity as a Function of Temperature: A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		Lynn C. Heishman; Application Notes for Doubly Rotated Quartz Crystals: A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
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		James M. Griffith; Development and Advancements in SC-Cut Crystals. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website (first presented at the RF Expo EAST, 1994).	
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		G. Weaver, W/ Hanson & T. Wickard; A Insitu technique for the Resolution of Aging Contributions Between Quartz Resonators and Oscillator Circuits. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		W.P. Hanson, T.R. Meeker & L.C. Heishman; A New Factor Affecting the Acceleration Sensitivity of the Resonance Frequency of Quartz Crystal Resonators. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	

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Sheet 07 of 10

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		N. Bates and G. Weaver; Phase Noise Frequency Distributions of SC and AT Quartz Crystal Resonators. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		G. Kurzenknabe; Practical Considerations in Specifications of High Stability Crystal Oscillators. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		W. Hanson; Proble Ion Signature in Quartz Electrodiffusion Data. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
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		B. Long and G. Weaver; Quartz Crystal Oscillators with Direct Resonator Heating. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		L. Heishman, A Review of Progress Related to Doubly Rotated Crystals. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
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		V. Bottom; A History of the Quartz Crystal Industry in the USA. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
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Sheet 08 of 10

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		P. Brown; The Influence of Amateur Radio on the Development of the Commercial Market for Quartz Piezoelectric Resonators in the United States. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		H. Fanus; The Quartz Crystal Industry in Carlisle, PA. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		I. Albright; The Effect of Temperature on Crystal Oscillators. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		Branching out Through Band Width; Specialists in Successful Risk Analysis; and Promising Developments from a 'Virtual Drug Company'. Oak Industries Inc. featured on 'Business Now' at 9 AM Sunday, September 12, on WCVB-TV (www.batv.com).	
		A Brief History of Corning Frequency Control. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		McCoy Electronics Photographs fromt he OFC Archives. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		McCoy Electronics Crystal Booklet (circa 1964) from the OFC Archives. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		S. Cantor, A. Stern & B. Levy; Clock Technology. A Technical Paper. IEEE, Frequency Control Reference and Tutorial Information website	
		Manish Vaish, A High Precision Quartz Oscillator with Performance Comparable to Rubidium Oscillators in Many Respects. A Technical Paper. 1996 IEEE Frequency Control Symposium Proceedings.	
		John R. Vig; Quartz Crystal Resonators and Oscillators for Frequency Control and Timing Applications. A Tutorial. US Army Communications - Electronics Command, AMSEL-RD-C2-PT. January, 2001. Approved for public release. Distribution is unlimited.	
		John R. Vig; Quartz Crystal Resonators and Oscillators for Frequency Control and Timing Applications. Product Catalog and Reference Materials. US Army Communications - Electronics Command. January, 2001. Approved for public release. Distribution is unlimited.	

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Sheet 09 of 10

Complet if Known	
Application Number	10/618,282
Filing Date	July 9, 2003
First Named Inventor	Sorrells, Martin
Group Art Unit	
Examiner Name	
Attorney Docket Number	AES 03-002

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
		I. Abramzom & R. Boroditsky; Thermodynamic Aspect of Short-Term Frequency Stability of Directly Heated Resonators. A Technical Paper. Valpey Fisher Corporation. Resource Center website.	
		C. Serant; Celestica Net Income Soars 110%. Industrial Article from Daily News Digest. Valpey Fisher Corporation. Resource Center website.	
		C. Souza; Chip Industry Still Expecting Growth in 2001. Industrial Article from Electronic Buyers' News. Valpey Fisher Corporation. Resource Center website.	
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		R. Shim; Bluetooth Bite Blunted by MS Pullout. Industrial Article ZD Net News. Technology Summit October 8-9, 2003 Bloomberg Auditorium, London. Valpey Fisher Corporation website.	
		Absolute Pull Range Note. Valpey Fisher Corporation website.	
		Training Session - Electronics Applications of Quartz Xtal Oscillators. A Power Point presentation. Valpey Fisher Corporation. Resource Center website.	
		Training Session - Crystal Environmental Specifications. A Power Point presentation. Valpey Fisher Corporation. Resource Center website.	
		Training Session - Crystal Specifications. A Power Point presentation. Valpey Fisher Corporation. Resource Center website.	
		Training Session - Frequency Tolerance. A Power Point presentation. Valpey Fisher Corporation. Resource Center website.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] Applicant's unique citation designation number (optional). [2] Applicant is to place a check mark here if English language Translation is attached.

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Approved for use through 10/31/2002. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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		Training Session - Quartz Crystal Work, An Intuitive Approach Part I and Part II. A Power Point presentation. Valpey Fisher Corporation. Resource Center website.	
		Seriers QR High Precision Timebase/Reference Crystals and QT High Precision Temperature Sensor Crystals. A technical Paper; Quartzdyne Inc.,Quartzdyne, Inc. information website	

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